

# ARCHITECTURE

VOL. XX.

AUGUST 15, 1909.

No. 2

ARCHITECTURE, conducted by a Board of Architects in the interests of the profession, is published the fifteenth of every month by FORBES & COMPANY, LTD., (A. H. Forbes, Prest.) 225 Fifth Avenue, New York. Its opinions on technical subjects are either prepared or revised by specialists.

PRICE, mailed flat to any address in the United States, Mexico or Cuba, \$5.00 per annum, in advance; to Canada, \$6.00 per annum; to any foreign address, \$7.00 per annum.

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ENTERED at the New York Post Office as second-class mail matter.

## PLATES AND ILLUSTRATIONS

EDW. CLARK HALL, Williams College, Williamstown, Mass.	
Exterior, - - - - -	Plate LXVI
Entrance, - - - - -	Plate LXVII
<i>Frank E. Wallis, Architect. Wm. J. Rogers, Associated.</i>	
MASONIC HALL EXTENSION, New York.	
Detail, - - - - -	Plate LXVIII
Exterior, - - - - -	Plate LXIX
Exterior, - - - - -	Plate LXX
<i>H. P. Knowles, Architect.</i>	
FIRST NATIONAL BANK, Cleveland, O.	
Exterior, - - - - -	Plate LXXI
Banking Room, - - - - -	Plate LXXII
Details, - - - - -	118
Interiors, - - - - -	119
Details of Façade, - - - - -	120
<i>J. Milton Dyer, Architect.</i>	
COUNTRY HOUSE, W. I. L. Adams, Montclair, N. J.	
Exterior, - - - - -	Plate LXXIII
Entrance, - - - - -	Plate LXXIV
<i>Frank E. Wallis, Architect. Wm. J. Rogers, Associated.</i>	
FIRST NATIONAL BANK, Pittsburgh, Pa.	
- - - - -	Plate LXXV
<i>D. H. Burnham &amp; Co., Architects.</i>	
SECOND REFORMED CHURCH, Schenectady, N. Y.	
Competitive Design, - - - - -	116
Plan, - - - - -	117
<i>Squires &amp; Wynkoop, Architects.</i>	
SECONDARY SCHOOL, Bromley (England).	
Perspective and Plans, - - - - -	121
<i>H. P. Burke Downing, Architect.</i>	
BOROUGH HALL, Rutherford, N. J.	
Competitive Design, - - - - -	122
Plans, - - - - -	123
<i>Squires &amp; Wynkoop, Architects.</i>	
CHURCHILL COTTAGE HOMES, Cheddar Valley, Somerset (England).	
Exteriors and Plans, - - - - -	124
<i>Silcock &amp; Reay, Architects.</i>	

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## COMPETITION

The Robert Fulton Monument Association of No. 3 Park Row, New York City, announces a competition among the Architects of the United States for the purpose of securing designs for the memorial of Robert Fulton, costing \$2,500,000.00 and to be erected in Riverside Park in the City of New York.

Architects of experience and good standing are requested to apply to the Association for forms on which to make application for the competition program and permission to have their names entered as competitors.

## ARCHITECTURAL CRITICISM.

THE Editor regrets that Messrs. Pell & Corbett were not named as associates of Lord & Hewlett, architects of the Masonic Temple, Brooklyn. This building was published in July ARCHITECTURE and Pell & Corbett should have been credited.

MR. WALLIS has long been known for his intimate knowledge of colonial architecture, and his excellent adaptation of Colonial designs to modern work. His work, unfortunately, has been mostly country houses, as often happens to clever men who have become known primarily as country house architects. The examples illustrated in this issue of ARCHITECTURE include, however, a college hall as well as a country house, and the same wise and thorough application of Colonial motives are there evident, as well as in the house of Mr. W. I. L. Adams, also illustrated in this number.

The Clark Hall at Williams College presented the difficult problem of a three-story building of no very great area, and it was cleverly solved by the introduction of the principal entrance into the second story at the only point where it was possible. This, and the use of the usual water table at the second story level produces the effect of a two-story building, and the lightness and simplicity of this water table, which still entirely fulfills its purpose, is noteworthy. While one inevitably feels that the mass of the building is not perfect, it is at once recognized that this is due to conditions and not to the design.

The building is very pure Colonial, much more so than most of the modern adaptations of that style, but is, nevertheless, very sincere and straightforward in design, and without the dryness and hardness which it is usually impossible to disassociate from work so archeological. The treatment of the end bays on the main front without any break in the roof above is saved from being illogical by the slightness of their projection, and the treatment of the skylight at the top of the roof, surrounded by the Colonial "fence" is both unusual and brilliant. The cupola, too, is both in character with the building and delightful in itself. The doorway is a very delightful piece of architecture, combining the dignity essential to a college building with the lightness and grace of the best Colonial work. The iron railing is also charming as is the treatment of the Palladian window above. It would have been perhaps better had this window come down to the top of the entrance roof, if not by a doorway, at least by means of white panels below the window. The reveal of the doorway seems too great for the reveal of the windows, and a lighter treatment of this would have been happier, but this is one of the few points to which exception can be taken.

Of especial excellence is the detail in the frieze and in

## UNIVERSITY OF PENNSYLVANIA

THE SCHOOL OF ARCHITECTURE offers full professional training in a FOUR-YEAR COURSE leading to the degree of B.S. in Architecture. An option is allowed in ARCHITECTURAL ENGINEERING. The GRADUATE YEAR grants a Master's degree, allowing specialization in advanced work. ADVANCED STANDING is granted to college graduates. Qualified DRAFTSMEN, desiring advanced technical training, are admitted without examination to the TWO-YEAR SPECIAL COURSE leading to a Certificate of Proficiency, and technical studies only may be taken by other persons of approved fitness. ILLUSTRATED ANNUAL sent on application. For FULL INFORMATION address Dr. J. H. Penniman, Dean, College Department, University of Pennsylvania, Philadelphia, Pa.



the door frame itself, of a kind which in these days of striving after the "virility" of French architecture is generally far too little used. Our architects seem to shy at delicacy of scale, but this example where delicacy of scale is combined with the utmost strength of proportion is precisely what is needed to lead them back into the paths of virtue.

The Adams house lacks something of the charm of Clark Hall, although it is admirable, both in mass and in detail. The transformation from the large windows extending to the floor, at the left of the entrance, to smaller windows at the right, the form of the large windows being recalled by the brick arches which form the mason's opening for the large windows, quite satisfies the eye accustomed to the repetition essential to perfect symmetry. The shutters in the second story are well designed to give both air and the solidity which all shutters of Colonial type should have, although had they been painted white they would have looked, in the photograph at least, somewhat better. The treatment of the extensions as semi-detached, is a motive with which I cannot entirely agree, although their mass bears the proper relation to the main mass, and they are in themselves admirably designed. The dormers, while exceedingly simple are correct, both in their absolute and proportionate size, and the manner of treating the grounds with the terrace in the front part flanked by shrubbery at the sides is a good one. The entrance motive of two story pilasters supporting the low pediment is agreeable except for the lack of support of the circular porch over the entrance which seem, at least to me, somewhat unfortunate. Nevertheless, there is so much charm in the detail of the cornice with the characteristic Colonial drops and the strygil frieze that it more than compensates for the unfortunate character of the hood.

Mr. Wallis was one of the first of present day architects to perceive the charm that lies in the Colonial style and its eminent suitability to American needs. With him is associated Mr. William J. Rogers. This use of it shows a depth of feeling and a note of honesty which some of our other architects conspicuously lack, and in choosing the Colonial style for the Willams building he is recalling to that splendid old college its ancient traditions.

**D.** H. BURNHAM & Company are always somewhat surprising, one can never tell what to expect from them. Sometimes they do buildings of the most utilitarian character and of wretched design, such as the Wanamaker building in this city, and at other times such splendid pieces of architecture as the Washington Union Station. The Pittsburg National Bank, while not of the highest order of merit is in many ways excellent. The character is that of the Italian Palazzo, with a tremendous cornice surmounting the entire building, and windows pierced through the frieze. The mullions between the windows and the corners are decorated as is usual in this firm's architecture, with plaques in low relief and they here fit very much better than in most cases where they are employed. The type of ornament is architectural in the extreme, and while lacking in the softness and roundness of the Italian ornament is nevertheless eminently suited to this work. The building will never rank as one of the mile stones of American architecture, but it is substantial, suitable for its purpose and without a single feature which can be criticized to its detriment.

**L**IKE the new Brooklyn Masonic Temple, that in New York is a rational and dignified piece of architecture. While by no means so imaginative and sympathetic as the Brooklyn building, it is well conceived and beautifully executed. The character is that of an office building rather than of a society building, with its purpose made evident by the wide spacing of the windows, leaving every alternate floor, at least in appearance, dark. The brick work is of the same high quality as in others of our latest buildings, and the brick is not only good in color, but worked into a pattern which, without distracting the eye from the mass of the building, adds interest to what would otherwise have been a blank wall. It is unfortunate that Mr. Knowles's treatment of the sides should not have been carried further. I suppose that every owner feels that it is a waste of money to embellish those portions of the building which may be seen only temporarily, but in a semi-public building such as this, it seems desirable to manage the design, not as a facade but as a block. Such an arrangement as that on the sides and rear of the Engineering Society's building would have immensely added to this, and while one cannot entirely blame an architect for not doing more than to carry light colored horizontal bands through the red brick of the sides, it seems as if he should somewhere have found the money to do it.

Photographs do not exhibit it to the best advantage, because they do not show the excellent color scheme which is one of its main attractions. The detail, although French, has none of the restlessness and heavy scale which one is wont to associate with that architecture, and which, I am glad to say, is becoming less and less prevalent in our newer buildings. We have certainly had the French epidemic very badly, but have been, I think, sufficiently inoculated to ward off any serious attack in future. When properly used, as in this case, the French style is both flexible and impressive, adapting itself equally well to tall buildings and to low ones, yet it can never attain the monumental sincerity and dignity which Messrs. Pell & Corbett and Lord & Hewlett achieved in the Brooklyn Masonic Temple.

**T**HE architecture of banks has been always studied with a view toward dignity, strength and impressiveness, and usually the architecture has been classic. Where the building is, as in this case, located in the middle of a block the problem is a simple one in every respect but novelty. There have been so many hundreds, possibly thousands, of banks built in the United States on similar plans and of similar heights that the exterior treatments have simmered down into almost a single design, with slight variance between different examples. Nine-tenths of them include an order the full height of the facade, treated sometimes with pairs of columns, or with columns and antæ enclosing a central arch, or at other times the facade is composed with three bays. The only difficulty which arises is the treatment of the cornice; how to terminate this without encroaching upon neighboring property is always a difficult problem. In the First National Bank of Cleveland, here illustrated, the three bay arrangement is used three stories high across the front with a single high banking room in the center, and the rear again returning to a multiple story arrangement. The quality of the design then, depends largely upon the detail and the fenestration. In this case, largely owing to necessities of interior design which are not at once apparent, the highest story comes at the top of the facade, behind the large windows, and is by no means so happy as it would have



been had the second and third stories been transposed and the small windows placed at the top. There was an attempt made to treat the second and third stories in one by carrying down the exterior trim to the top of the first story. It is very likely that had the stone work in the second story been changed into metal the desired result would have been obtained, but as it stands the arrangement is not a happy one.

The key blocks with the Minerva heads and the arch of the third story window are both too large, and project too far from the surface of the building. A flat key block without sculpture (unless in very low relief) would have bettered it, especially as the scale of the heads is in conflict with that of the sculpture above the first story openings. With the exception of these two points the building is a magnificent piece of design, simple and attractive in mass and exquisite in detail. While the columns and capitals are distinctly scholastic they are of exceptional beauty and excellent in scale. The enrichment of the cornice is admirable and the carvings over the end columns both interesting in themselves and well placed to show to best advantage the lettering. The chief interest in the facade lies, however, in the remarkable sculptured figures over the first story windows, together with the detail that frames them. The key blocks have upon them single nude figures in very low relief, so low, indeed, as to suggest the Egyptian wall decorations, while at either side are placed seated female figures exquisite in modelling and of wonderful architectural character. They are blocked out rather than modelled, in the stiff and constrained pose essential to their positions, and they carry out admirably the lines of the building. Sculpture such as this is rare indeed, and their design suggests at once that the architect and the sculptor must have been, not only in sympathy with each other, but working in conjunction.

I cannot omit mention of the beautiful draftsmanship of the details, where not only is the ornament admirably drawn, but the construction is thoroughly worked out and shows clearly the intent of the architect. A drawing is primarily an instrument of service, but good drawing is more than that, it is itself beautiful. Too many draftsmen forget the practical side of their work in endeavoring to compose a sheet prettily and to silhouette and render it. This drawing is one which anyone could be proud to have made from the point of view of appearance alone and in addition, it is as useful a working drawing as I have seen.

The interior is, like the exterior, a careful and scholarly piece of design, with little departure from accepted lines. It is beautiful in detail, and of broad and generous effect. The Directors' Room, a cut of which is shown here, has one of the painted wooden ceilings which are again coming to be used for large rooms, with an excellently designed painted frieze below it, and a wall covering, which though here somewhat spotty, is in reality much simpler and quieter. The mantel piece, of pronounced Greek origin, is out of sympathy with the other details of the room, both in design and in color. It appears absolutely disconnected from the wall.

As a whole, both the interior and exterior represent the careful and painstaking effect of a thoughtful mind, resulting in a building both beautiful and worth while.

#### PROFESSIONAL ETIQUETTE IN GREAT BRITAIN.

**A** PROPOSAL to alter the declaration which every Fellow and Associate has at present to sign when joining the Institute, and every Licentiate will have to sign

in the future, has raised the whole question of architectural etiquette, says the *London Building News*. The matter is also the subject of one of the By-laws of the R. I. B. A., which is so drastic in character that at first sight there appears to be no reason for any other declaration than that the new member has read the By-laws and is willing to be governed and bound by them. It is even comprehensible that an undertaking couched in definite words, and aimed at certain particularly objectionable customs might prove embarrassing. Some considerable portion of the present declaration deals with matters which are covered by a recently passed Act of Parliament rendering penal the taking of an illicit commission, so that it is almost an insult to ask anyone to sign it. Anything beyond this must more or less encroach upon the individual's personal prerogative, and many things which may, in a general sense, appear inadvisable may, in other special instances, be not only perfectly permissible, but almost inevitable. It may very well happen, for example, that, when entering a body like the Institute, a young man might sign anything that was put before him, including, say, an undertaking not to tout for employment as an architect, not to advertise himself as such, and not to have any interest in any materials or appliances which might be used upon the buildings which he may in the future be called upon to supervise. All these are reasonable things to ask, and for a member of the Institute to undertake not to do, speaking broadly. It is not proposed, we believe, to introduce them all into the amended declaration; but they are all, however, perfectly covered by the By-law which states that any member conducting himself in a manner which, in the opinion of the Council, is derogatory to his professional character shall be liable to suspension or expulsion. There is a good deal of difference, however, between a definite undertaking to refrain from certain forms of misconduct, and liability to punishment if such misconduct is proved. The word "liability" as used here has a sufficiently wide meaning; for punishment may be given or withheld at the Council's discretion, thus providing for exceptional cases. The undertaking is more definitely binding. There are, for instance, many descriptions of advertising. We have discussed this matter on previous occasions, and have endeavored to show that every case has to be considered on its merits, with regard to the circumstances of the particular man and the way in which he advertises. A member of the Institute practising in some of our Colonies or in some places abroad, may find that it is the usual professional course to insert advertisements in newspapers. Where this is the custom, there can be no real objection to it; yet it would be highly objectionable if an architect were to do this in England. An architect may not advertise himself as such, yet he is allowed by old custom to advertise in the technical journals that he prepares students for architectural examinations. A clever man will see that his name appears in his local press as the architect for this, that, or the other building in course of erection or just completed. The advertisement is a more valuable one than if he paid for it; but it is an advertisement, all the same. Yet no Council of the Institute would for an instant think of blaming the architect in consequence. The whole problem bristles with difficulties; yet when each case is considered individually, the difficulties melt away, for common-sense can then be applied, and the question resolves itself into whether the advertisement is such as good taste permits or condemns.

(Continued page 117)







(Continued from page 115)

Touting for work is an even more difficult thing to tackle by declaration. It can be done openly or in the most subtle manner, and the more subtle canvassing—such, for instance, as a clever woman will undertake on her husband's behalf—often more flagrantly violates the dictates of our sense of justice than that which is open and above-board. Somehow or other (it will be said) work must be sought; and, just as in the case of advertising, the whole thing resolves itself into a matter of good taste or bad, and frequently as to whether some other architect is being harmed by what is being done. What would be perfectly justifiable, too, in some instances would be entirely unjustifiable in others. A signed declaration not to tout might be very much in the way of the advancement of a highly honorable young man, who might, having signed, feel that he ought not to do many things which an older man or one less scrupulous would think quite justifiable. As a result, the declaration would act as a bar to the progress of the architect with the more sensitive nature, while it would be either forgotten, or at any rate neglected by those with tougher skins, who, if they were brought to book for their action, would be just the men who would be capable of fighting their case to the uttermost. The Institution of Civil Engineers includes a clause relating to touting in its entry declaration, and the etiquette with regard to the manner is well observed. All the same, we think that the R. I. B. A. is well advised to say nothing about it, but to leave flagrant cases to be dealt with under the general terms of the By-law. Inherently, every man recognizes that etiquette controls a matter such as this, and everybody knows what etiquette requires.

With regard to admitting goods into a building, in which goods the architect has an interest, there are more difficulties to contend with. It seems outrageous to suggest that the Institute should interfere in any way with the private investments of any of its members. On the other hand, it is conceivable that an architect might specify over and over again some particular fitting of which he was the patentee, and in which he held proprietary rights, or at least upon the sale of which he received a royalty. Too binding a declaration would prohibit an architect from holding shares in, say, a brickfield or a cement company, except under the condition that he never permitted bricks or cement manufactured by those companies to be used upon any of his works,

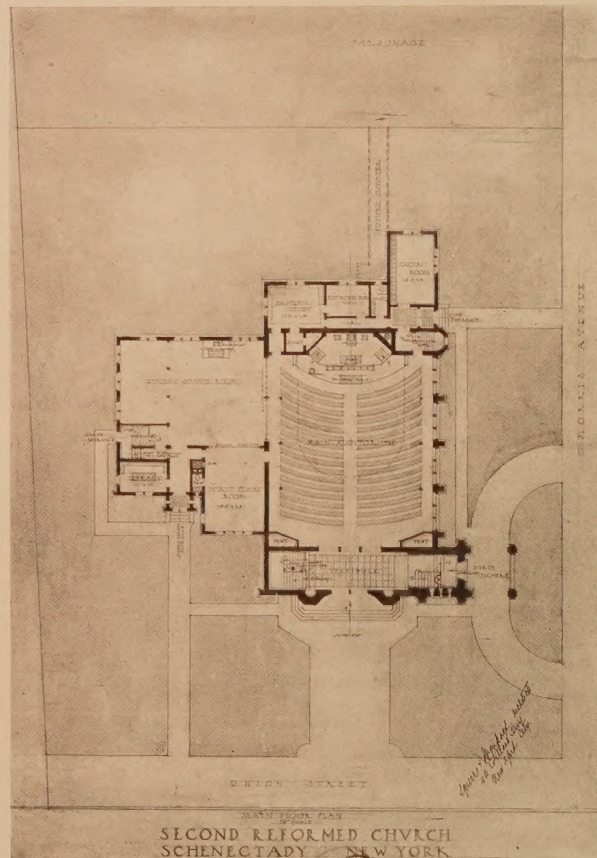
however good they might be, and however suitable for the circumstances of the building. This would be extremely unjust. In many cases it might necessitate an architect selling valuable shares at a loss as an alternative to resigning his position as a member of the Institute; and it is even conceivable that he might hold the shares as trustee for others, or be himself one of a number for whose benefit the shares were held in trust. In the one case he would not be justified in selling, and in the other case he possibly could not control the sale or purchase, not being himself trustee. Yet the undertaking would be binding upon him; even if his client particularly wished him to use those special materials, he could not do so and retain his membership. The matter seems, again, to be one which is much best left to be dealt

with by the Council under the By-laws, when special circumstances such as these can be taken into consideration. An architect may be an inventive genius; yet the very fact of his inventing an important appliance and putting it upon the market would prevent him from utilizing it for any client of his own, unless he took the drastic course of selling his patent rights — and this would probably be the wisest thing that he could do; but it might not be the best for his pocket, nor probably even the right thing if he had a wife and children depending upon him.

The net result seems to be, therefore, that the less detailed the declaration is the better, coupled with wide powers given to the Council to consider each case as it arises, quietly and judiciously, upon its own merits, taking every circumstance into consideration. No declaration, however carefully worded, could possibly cover every case. There is the architect, for instance, whose

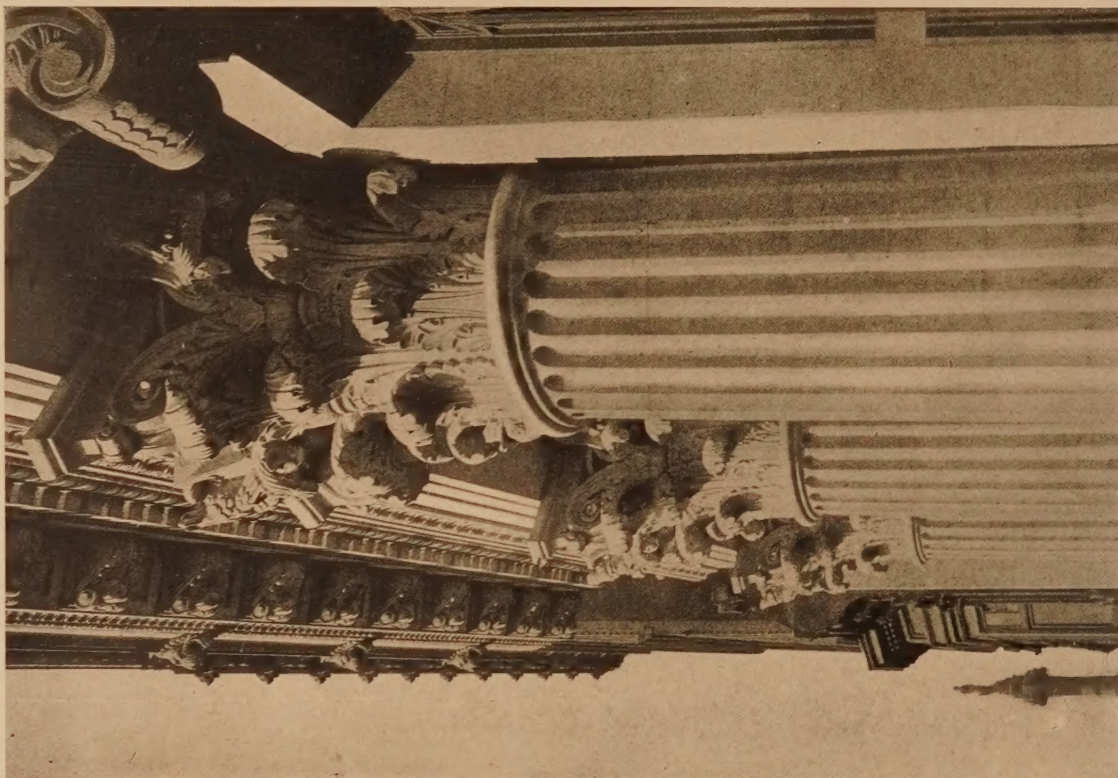
brother is a builder, or whose sister has married the manufacturer of some patent article. He might play into his relations' hands, and he might do this either honestly or dishonestly. No declaration could touch him in either case; but wide-reaching powers, wisely used by the Council, could be appealed to where dishonesty was suggested. It is, too, as a rule, the unexpected that most often happens. Thus the most difficult, and sometimes the most flagrant, cases of professional misconduct are utterly unprecedented, and not to be touched by declaration at all.

Anthony U. Morell and Arthur R. Nichols have entered into a partnership for the general practice of Landscape Architecture and Engineering, with offices in Minneapolis.

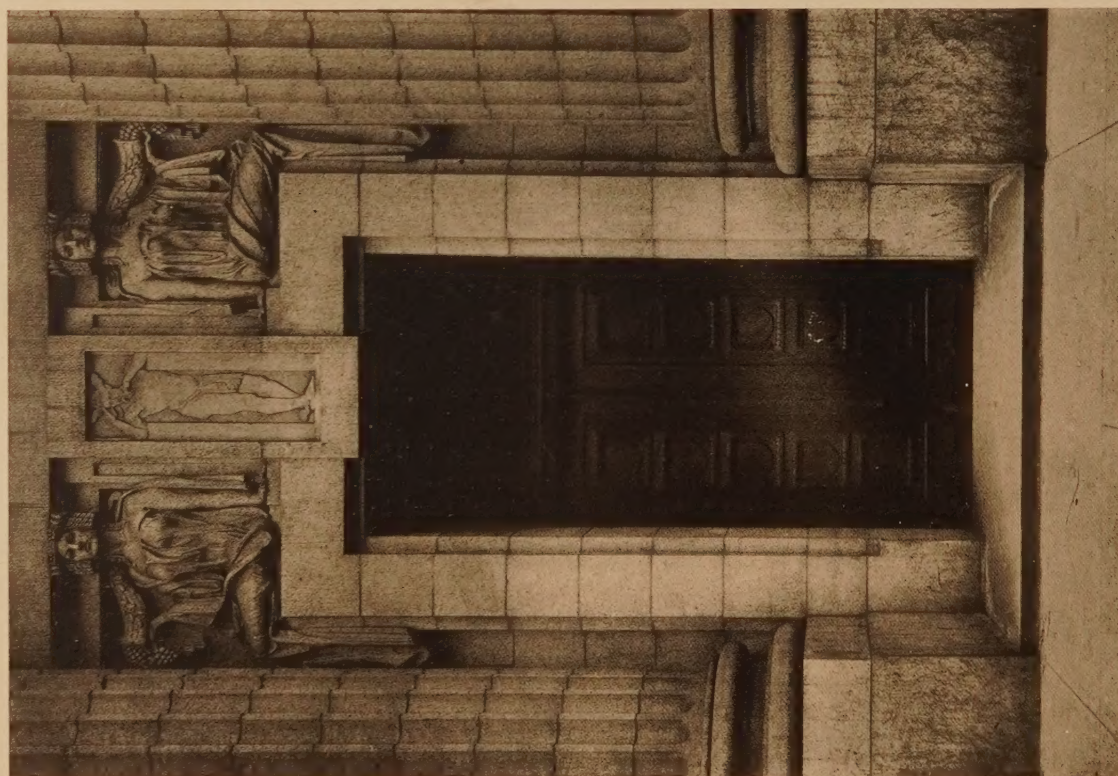


PLAN, SECOND REFORMED CHURCH, SCHENECTADY, N. Y.  
Squires & Wynkoop, Architects.





J. Milton Dyer, Architect.



DETAILS, FIRST NATIONAL BANK, CLEVELAND, O.





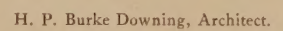
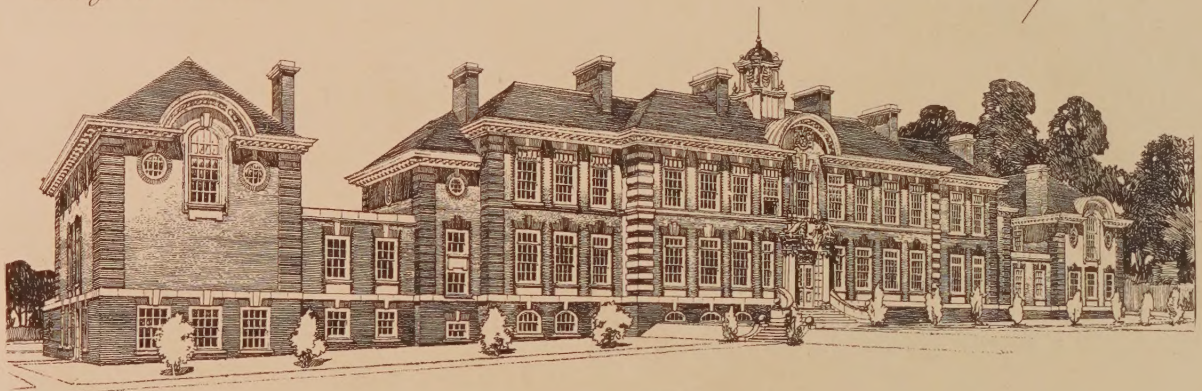
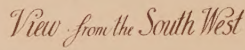
J. Milton Dyer, Architect.

INTERIORS, FIRST NATIONAL BANK, CLEVELAND, O.









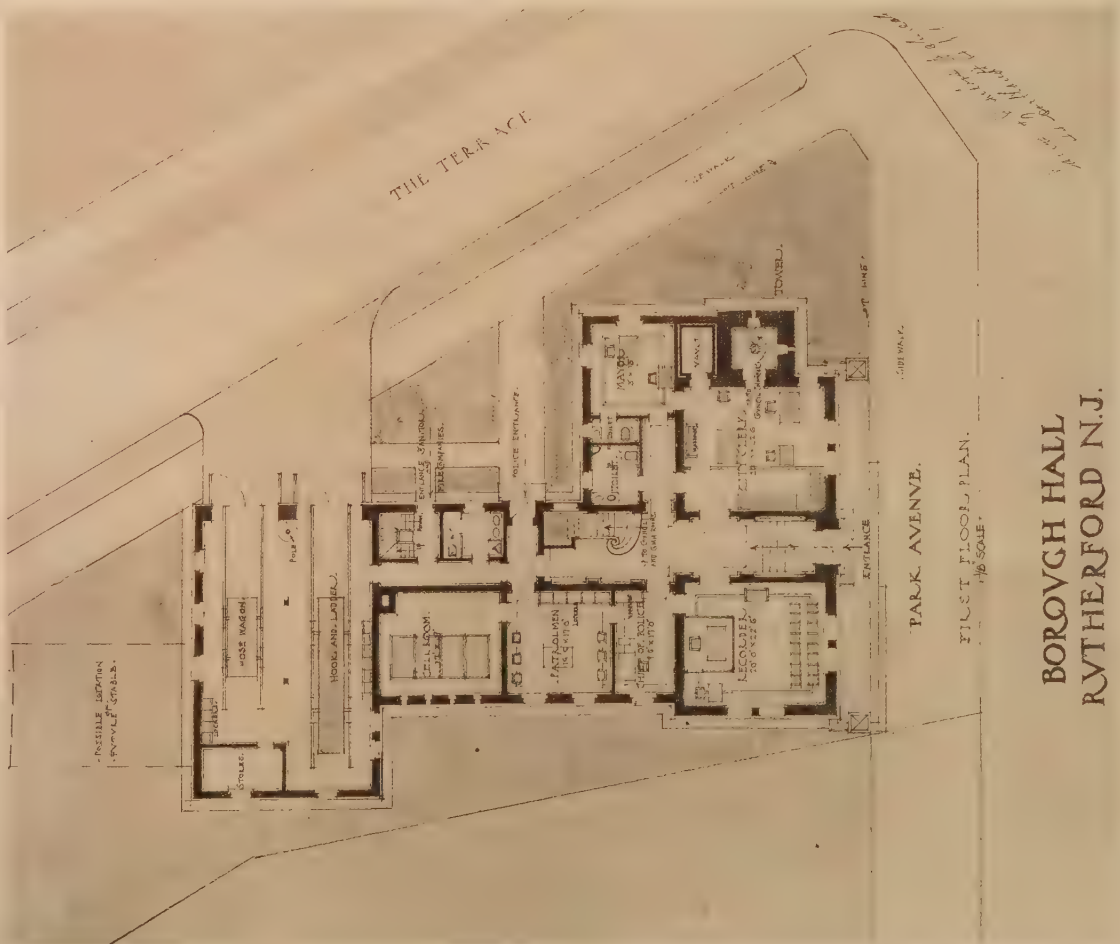




COMPETITIVE DESIGN, BOROUGH HALL, RUTHERFORD, N. J.

Squires &amp; Wynkoop, Architects.



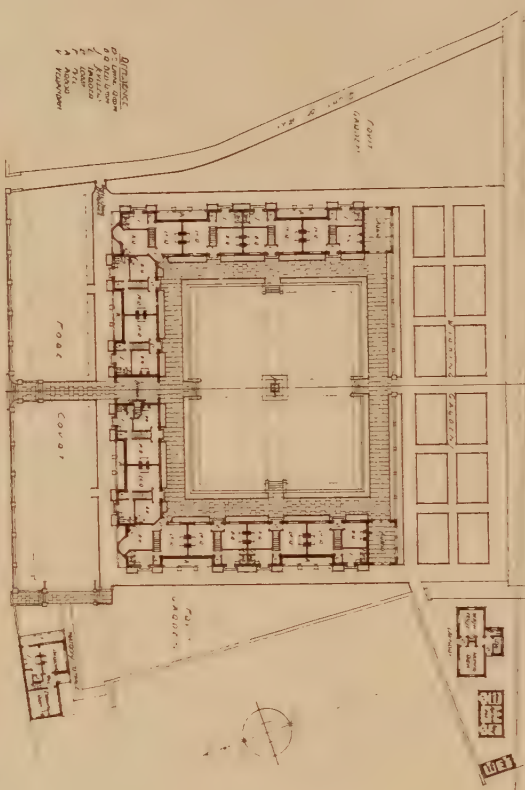


BOROUGH HALL  
RUTHERFORD N.J.



BOROUGH HALL  
RUTHERFORD N.J.





CHURCHILL COTTAGE HOMES, CHEDDAR VALLEY, SOMERSET (ENGLAND).

Twelve comfortable homes for the deserving poor built by the late Mr. Sidney Hall, who also provided a sufficient fund for maintenance.

Silcock & Reay, Architects.



## TWO BURIED INDIAN CITIES.

FEW architects of the present day—of the younger generation, at any rate—recognize how full India is of architectural works of great magnitude and beauty. They have forgotten, even if they have read of, that about which Fergusson and Stevens wrote. They know, in a vague way, that there are great buildings there, but hardly realize that many of them are of a pure architectural style. Some attention has lately been drawn to the ruins of Gaur and Pandua, now hidden away in a remote corner of Bengal, in a desolate region where for nearly four centuries the banyan-tree and the wild beasts of the field have reigned supreme. They were Mohammedan cities—Gaur, the earlier, being supposed to have been the most ancient city of Bengal. Its acknowledged history, however, begins with the Mohammedan conquest in 1242 A. D., and the ruins which have been recently exposed, owing to the efforts of the late Sir John Woodburn, might very well have been discovered in the South of Spain, so wonderfully similar are they to those of the Mohammedan buildings there. They are, in fact, pure Moorish work, presenting features of great beauty, combined with curious methods of construction which suggest that the beauty aimed at was to render the buildings ornate first and constructional afterwards. Among those at Pandua, which are known to have been built in the 14th century, there is a beautiful Moorish niche in the Royal Chapel, indicating the direction of Mecca, the head of which appears to have been originally in two planes of cusped-pointed form. Careful examination of the jointing, however, shows that the two rings are cut out of the same stone, and that the work, instead of being arched, is corbelled. There is an even more interesting piece of construction in the corridor within the Golden Mosque at Gaur, a little later in date. The arches here are constructional, extremely deep, and formed of stones in thin slabs; but each bay is covered by a dome, the pendentives being formed by corbelling with alternate straight and herring-bone courses. Originally the effect must have been sombre in the extreme, as there are no apparent means of lighting; but two domes are now sufficiently destroyed for light to be admitted and for the construction to be seen. The only indication that the work is Indian, and not that of any other great Mohammedan country of that time, is to be found in the use of waterspouts, or gargoyles, through which flowed the drainage of the main building, in the form of elephants' heads with the trunk raised and the mouth open. These indicate work in a country where the elephant was known, while at the same time they are contrary to the strict Mohammedan rule that the figures of animals should not be represented on their buildings.

The ruins which have been cleared consist of little else than the mosques in these two towns, the Adina Mosque at Pandua having been commenced in 1307 A. D., and being the most remarkable example of Pathan architecture which exists. It should, perhaps, be better described as Indo-Saracenic. It forms a great quadrangle on plan, surrounded by massive walls, which support what is left of the ruined cloisters, its length being 500 ft. from north to south, and its breadth 300 ft. from east to west.

## APPROXIMATE ESTIMATES.

TO the old practitioner, the preparation of an approximate estimate will probably present but little difficulty, because he will have accumulated the necessary data

during the course of his practice; but to the young man just commencing, and not yet in possession of such data, the task is one of very considerable difficulty, especially in the case of a large public building. Although the difficulty may arise rather from lack of information than from ignorance of method, still the subject is one of such importance that it may be useful to consider the arrangement of data and the systematizing of methods. There are three generally accepted ways of arriving at an approximate estimate, each useful in its own proper connection and each requiring its own proper set of data. Perhaps the most frequently—one might almost say *too* frequently—adopted method is that of calculating the cubic contents, and pricing at so much per foot cube, according to the type of building and kind of materials. This is an exceedingly useful and rapid method, and experience will enable a man to estimate with considerable accuracy in this way. The data required are the prices per foot cube of various classes of buildings of recent erection; but to be of real value these prices should have been collected by the estimator from buildings which he himself has carried out. It is a good practice to ascertain at the finish of each job what its price per foot cube has actually been, and to keep tabulated lists. In the case of a building differing materially from anything one has carried out before, it will be readily seen how difficult it is to assess with anything like accuracy the amount by which such variation will affect the price per foot cube. In estimating for a large building from its cubic contents, it will generally be found necessary to subdivide the building into two or more classes, and to price each at its own particular rate. For instance, the main block of a building may be of a much more expensive character than the remaining portion; and in this case it is much more accurate to price them as separate buildings than to attempt any kind of averaging which, at the best, can be little better than a rough guess. In the case of a building with a large basement, where the work is of a perfectly plain character, it will often be found convenient to keep the basement and superstructure separate. Where this method of estimating is adopted, it is usual to let the price include only the building pure and simple, and to put in separate estimates for drainage, heating, etc., which obviously could not be accurately apportioned at per foot cube of building. Fence-walls, yard-paving, etc., should, for a similar reason, form separate estimates. The most generally accepted rule for ascertaining the cubic contents of a building for estimating purposes is to take the area on plan by the height from the top of the concrete foundations to halfway up the roof, and to add for dormers and other projecting features. In collecting data for these estimates, attention should be given to classification, and any peculiar features or circumstances affecting the cost should be carefully noted.

Another method adopted in the case of churches and schools is to allow so much per head of seating accommodation. This is often a useful guide where one has exactly similar buildings already carried out for comparison; but a warning is necessary here, to see that the ratio between seating accommodation and cubic contents are similar in both cases. Any extra height given to the building or extra vestry or other accommodation will entail extra expense which has to be distributed over the whole, and, expressed at per unit of seating accommodation.

The most reliable method of arriving at an approximate estimate is by means of rough quantities; but it is not used



as frequently as it should be, because of the time involved. It should be the only allowable method for any large building and for competitions, the price per foot cube being ascertained merely as a check. In competition work, it is, unfortunately, rarely possible to spare the requisite time for the preparation of the roughest of quantities, and the result is only too well known. In settling the price per foot cube the wish becomes father to the thought, and the desire of the architect to get his design carried out for the stipulated sum persuades him of his ability to do so; and there is very little doubt but that men who are too honest to deliberately deceive, do, in their anxiety to win a competition, persuade themselves first, and then others, that work can be satisfactorily carried out at impossible prices. Indeed, it is not too much to say that a man whose enthusiasm does not carry him so far, stands but a poor chance of winning many a competition. This injustice (for it is no less) to any honest competitor is likely to continue so long as the task of checking or judging the estimates is not given a much higher place among the duties which the assessor is called upon to perform than is the case at present. Such a task would certainly be rather a formidable one in the case of a big competition, and one which it would hardly be fair to call upon the assessor, who must be at the head of his profession in other and very diverse matters, to perform unaided. He should have the advice and assistance of an expert of no less standing in his own sphere than the assessor is in his. It may be argued against this mode of procedure that a competitor might fairly claim to have the question of price settled by actual tender. This, of course, would seem the fairest way; but, then, it must be remembered that quantities have first to be prepared, and who is to pay for them in case the price exceeds the allowable limit? Then, again, in such a case the competitor will be certain to claim that he can reduce the cost by cutting out or cutting down materials or finishings; and heart-burnings (of which there are enough in every competition) would be increased rather than diminished. Enough has been said to prove, if proof be necessary, the importance of the subject, and the injustice which its neglect often inflicts. In important work, then, the time and trouble expended on the most accurate method will be well repaid in all cases, unless we must except competition work.

The method of estimating by rough quantities consists in measuring the main items and including in them all finishings and labor. No very hard and fast rules can be laid down; but each case must be settled on its merits, and the method will vary, within certain limits, according to the judgment of the individual estimator. Generally, the work will be divided into sections, the digging being roughly measured and priced by itself, and also the concrete foundations and walling up to basement floor, or, if there be no basement, the ground floor. From this point, the walling will be measured per foot or yard super., according to thickness, and priced, including plastering and all finishings; the external walls being measured first, the price to include facings on one side and plastering, etc., on the other. Doors and windows may be measured in, the price being adjusted accordingly, or they may be deducted and priced separately at so much each, or so much per foot super., including everything. The price for floors might include floor-boards, skirtings, joists, pugging, ceilings, and cornices. Staircases may be taken per tread or per foot super., the price to include strings, newels, balusters, handrails, apron linings, plastered soffits, etc.; and roofs at per square, the price to include

slating, boarding or battens, felt roof-timbers, external plumbing, eaves-gutters, and rainwater pipes. The top ceilings may be separately measured, or may be included with the roof, while sanitary appliances may be numbered and priced at so much each, to include fixing and all plumbing complete. Water service may be priced by a lump sum, or the length of piping roughly measured and the cisterns and fittings numbered. Grates and ranges may be numbered, and an average price put to include hearths, mantelpieces, and fixing. Drainage can be taken out per foot run, the price to be an averaged one, to include all bends, junctions, etc., digging, filling-in, and cutting away and making good, the manholes being priced separately at per foot of depth. Fence-walls may be measured per foot super., or per foot run by an average height, the price including digging and foundations; stonework, if ashlar of an ordinary thickness, to be included in the price of the walling. Ordinary window-sills and doorsteps may be included with windows and doors. Copings may be measured per foot run, but any other special stone features will probably be better cubed. Rolled-steel joists, if supporting floors, would, if we follow our principle out, be included in the price of the floors. As, however, their quantity per unit of floor area must vary considerably, this ratio would have to be worked out separately for each individual case; the simpler plan would be to measure them separately and weight them out from a trade list. The price might include stone templates, and, in the case of joists carrying walls, cover-stones also. A workable average of template, etc., per hundredweight might be arrived at. Gas or electric lighting and bells would be priced at per point. The measurements are quite a simple matter; the accuracy of the method depends chiefly on the preparation of the schedule of prices to be used. If time permitted these to be accurately prepared for each job, then the resulting estimate might be made practically as accurate as that prepared from a complete bill of quantities. In approximate estimates, however, such a course is usually out of the question, so that the most practicable thing to do seems to be to prepare an average schedule, to keep it revised and up-to-date (quite a simple matter, and one which occupies but a few moments at a time once the schedule has been prepared), and to modify the prices to suit each particular case. A little practice and judgment will enable this to be done with very considerable accuracy. The preparation of the schedule, itself a most valuable education in pricing, will now be considered. It may be said to consist in apportioning to the main items the value or values per unit of the subsidiary items to be included with it, and will entail the assignment of the proper fraction of lineal items to each superficial unit of main item, and of the proper fraction of superficial or lineal items to each cubic unit of main item. In the case of the walling this will be quite simple, because the same dimension applies both to walling, facings, and plastering, so that the three separate prices per foot super. have merely to be added together. In dealing with a floor, however, the case is very different, and whether it be decided to price this per foot or yard super., or per square, it will be usually much simpler to work it out for the larger area in the first instance. Taking a square of flooring, the price of any given thickness and description can be readily found from the average of recent contracts, or by analysis from the current prices of materials and labor. Now, a square of flooring consists of 100 ft. super. Assuming, then, a room 10 ft. by 10 ft., and, say, 11 in. by 2 in. joists are used, then ten joists will be required, each 10.9 ft. long,



which will equal 16 ft. 6 in. cube of fir framed in floors, the value of which must be added to that of a square of flooring. Twenty feet of 4½ in. by 3 in. wallplate will also be required; this will equal 1 ft. 11 in. cube of fir in plates and lintels, the value of which must also be added, besides 40 ft. run, or, to allow for door and fireplace, say 36 ft. run, of skirting, and, say, six mitres to skirting and four yards of paint. Then, if there be a ceiling under, there would be 100 ft., or, say, 11 yds. super., of lath, plaster, float-and-set ceiling, and twice distemper, and about 40 ft. run of cornice, with a minimum of four internal mitres—say six—to be added also. In this case, cubic, superficial, and lineal dimensions have all been apportioned to a square of the main item, and if the price per foot super. be required instead of per square, it can readily be found by dividing by 100. So in the case of windows and doors: take one window or one door of average size, add in its run of linings, architraves, and window-boards, and the value of hinges, locks, etc., and the super. of glass and painting, and you have the total value per door. Divide it by the number of feet super. in the door or window, and you have the total value per foot super. A very little practice will enable the estimator to apportion all these things mentally in less time than it takes to write it, and a most valuable system of estimating will have been acquired. The preparation of one standard average schedule on these lines is strongly urged, for its own as well as for its educational value.

To ascertain the price of roofing, including boarding and all timbering, etc., a similar method would be adopted; but it might be more convenient in the first instance to find the value of one complete bay, as this would contain one whole truss, if trusses there be. With regard to window and door openings, one often hears it asserted that the value of the deductions about equals the value of the windows; but it must be obvious that if this holds good for one thickness of wall it cannot hold good for any other. It is advisable to work out one or two examples in order to find what actual difference exists, and then a figure or figures may be arrived at which may be added or deducted for every opening, grouping the openings according to the thickness of the walls or any other condition affecting the price. The preparation of a schedule as suggested, and its subsequent use, will gradually suggest to the mind of the user many valuable hints and short cuts which can be acquired in no other way. There is no royal road to estimating, either approximate or otherwise, and the short cuts and quick methods can only be used intelligently and safely by the man who has discovered them for himself.

THE catalog on Tungsten Reflectors recently sent out by I. P. Frink, is an interesting proof of commercial alertness, for its contents deal with the new tungsten lamps and show a full grasp of the situation. These special reflectors embody all the essential conditions that are necessary in dealing with the new illuminant, and offer many practical ideas that will be promptly welcomed by architects and builders all over the country.

ISN'T it strange," mused the woman, "that so many different names should be applied to persons who patronize the different trades and professions. A lawyer has his clients, doctors and dentists have their patients, a merchant has his customers, an artist has his patrons. What," she added turning to the architect, "do they call the people who patronize you?"

"Victims," said the architect with suspicious spontaneity.

THE rebuilding of the Campanile at Venice has made rapid progress during the last twelve months, and it has now attained a height of 150 feet. By the end of 1909 the main portion of the tower will be finished, and the marble loggia which will surmount the tower will be begun.

This time ample precautions have been taken to insure the stability of the Campanile, all the bricks being chemically tested and subjected to high pressure before being used. The old pile work was in an excellent state of preservation.

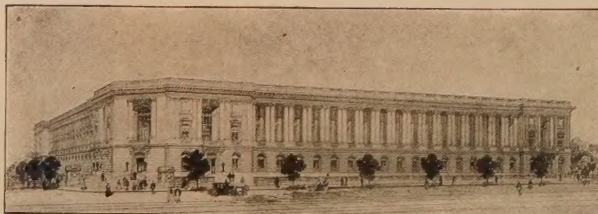
A gilded statue of the Virgin in terra cotta, which was a special object of veneration, and which was broken in more than 4,000 pieces in the falling of the tower, has been put together again with infinite patience by experts, only the little John the Baptist by her side being irretrievably lost. It was practically reduced to dust. The statue of the Virgin will occupy relatively its former position in Sansovino's famous loggia.

#### BOOK REVIEWS.

CRAFTSMAN HOMES. Gustav Stickley. 1909. Craftsman Publishing Co., New York. Cloth. \$2.00.

A new interest is being taken by men and women who are building homes, and publishers are pressed for good books on this particular subject. Perhaps no man in America has given so much thought and is more fitted to compile a book to meet such a call, and from an immense collection Mr. Stickley has selected wisely. The plates and plans furnish a vast variety of ideas for buildings and the text matter, written by best authorities, contains innumerable suggestions for arrangement, convenience and general equipment for homes that breathe comfort and peace. This book is acceptable to both owner and architect.

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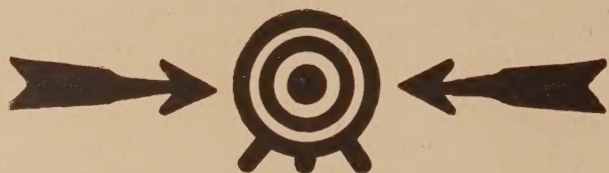
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